## EASE OF USE AND ATTITUDE OF PRE-SERVICE TEACHERS USE OF E-LEARNING TOOLS DURING THE Covid-19 PANDEMIC IN COE IN NORTH-WEST, NIGERIA

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### Abstract

*This research on ease of use and attitude of pre-service teachers' use of e-learning tools during the Covid-19 pandemic in COE in North-west, Nigeria, was guided by two objectives and two research questions. The study used a descriptive cross-sectional survey research design in the study. The researchers used mixed methods (quantitative and qualitative) for data collection. A multistage sampling technique was employed to select the sample. The total population of the study is 113,030. The total sample that was chosen is 372. The instruments used for data collection were questionnaire and data-blank which were adopted. The frequency and percentage were employed to analyze the respondents' demographic information. To answer research questions descriptive statistics (frequencies and percentages) were used. The summary of the major findings points out that, e-learning tools are very easy to run and the attitude towards the use of e-learning tools is positive by the pre-service teachers. The study affirmed that e-learning can be used as an instructional tool since pre-service teachers in colleges of education in North-west, Nigeria can run the e-learning tools and they possessed positive attitude towards them.*

**Keywords**:     Attitude; Ease of Use; E-learning Resources; Instruction; Covid-19.

### Introduction

A professional teacher always is trying to possess tools that can make his/her teaching meaningful and successful, and this could be possible when a teacher can easily manipulate his/her teaching aids properly. Technological innovations change all forms of teaching and learning, gradually teaching and learning are moving from conventional learning to e-learning. Conventional teaching is bound to the classroom; e-learning can take place anywhere regardless of time. The outbreak of the Covid-19 pandemic resulted in the closure of all schools in Nigeria, this pushed the government, educationalists, NGOs, parents and students to look for another alternative, which was the reason e-learning become a hot cake. The novelty in technology demand changes in the way education is being arranged as well. More so, this entails increased involvement of information technology in all stages of the learning process, which has been known as e-Learning, or more recently as m-Learning (Ismaila, 2020).

E-learning is a computer-based educational tool or system that enables you to learn anywhere and at any time. Today e-learning is mostly delivered through the internet, although in the past it was delivered using a blend of computer-based methods like CD-ROM (Epignosis, 2014). E-learning is an educational approach that combines different types of multimedia technologies to ensure better educational experiences for students and teachers (Deperlioglu, Kose & Yildirim, (2012). E-learning is an educational approach that combines different types of multimedia technologies to ensure better educational experiences for students and teachers. Nowadays, it is a popular approach among especially teachers and educators. The e-learning method allows teachers and educators to provide educational materials and related knowledge to a wide range of

learners by using more effective and efficient communication channels (Ismaila, 2020). E-learning can be described as any technological tool/resource that can be utilized in teaching and learning without considering place and time. E-learning tools/resources are computers, the internet, podcasts, WhatsApp, Flipped, and video conferences, just to mention a few.

Mobile learning (m-learning) describes a new form of learning that merges e-learning with mobility. However, mobile learning is the new aspect of e-learning, for example, e-learning is learning supported by digital tools and media. It is also explained that mobile learning is e-learning that uses mobile devices and wireless transmission (Ismaila, 2019). Hence, many similarities can be found when comparing mobile with e-learning. Both applications came to support and enhance the learning experience by utilizing technology. On one hand, both applications further provide common services such as the delivery of the learning content, support learners and provide quizzes and assessments. On the other hand, there are some differences between the two learning forms. Mobile learning is more flexible than e-learning; Mobile learning supports the learner's mobility by providing access to the learning content anywhere and anytime while in e-learning the mobility is constrained to the weight and the size of desktop or laptop computers. Furthermore, transport mobile device has some capabilities that can be delivered with greater ease than any other electronic tools (Ismaila, 2019). Indeed, mobile phones are parts of devices useful for both mobile learning and e-learning. It was observed that the majority of pre-service teachers and their lecturers in North-west, Nigeria owned mobile phones, which is one of the e-learning resources. This study is now trying to investigate how pre-service teachers use or manipulate e-learning tools and also their attitude towards the use of these tools for their learning during the Covid-19 pandemic. The pedagogy that promotes learners' involvement is the use of technology appropriately which lead to effective teaching and learning (Tijani, 2021).

The research covered all pre-service teachers in colleges of education in North-west, Nigeria. The study delimited to the Federal College of Education, Zaria, Kaduna State (FCEZ), Federal College of Education, Kano, Kano State (FCEK), Federal College of Education, Katsina, Katsina State (FCEKK), Shehu Shagari College of Education, Sokoto, Sokoto State (SSCE) and Zamfara State College of Education, Maru, Zamfara State (ZSCEM). The reason for delimiting the research is due to time constraints and logistics problems.

**Justification**

All schools were closed during the 1st phase of Covid-19 in Nigeria; the measure was taken to hold the spread of the Covid-19 pandemic. This issue called the attention of our leaders, educationists and students to look for another alternative to ensure instructional continuation. E-learning could be the only universal remedy for continuous learning despite any pandemic. Covid-19 can only spread when you get in touch with people. The problem here is the pre-service teachers in colleges of education in North-west Nigeria may not use e-learning resources due to its operational processes. They may find it hard to use because of their mode of operations, it needs a lot of tools; computer or web 2.0 related tools, electricity, internet and a conducive atmosphere to mention but a few. The use of such devices can help them to have access to the network, installation of applications, and browse, and download files related to their academic activities from their lecturers and their fellow pre-service teachers. However, from their attitude toward

using e-learning tools is not known whether or not they used it for e-learning during the Covid-19 pandemic for their academic programs or other tenacities.

## Objectives of the Study

i.      To examine the extent to which pre-service teachers perceived the ease of use of e-learning tools during the Covid-19 pandemic for academic purposes in colleges of education in North-west, Nigeria.
ii.     To assess the attitude of pre-service teachers towards the use of e-learning for the improvement of their learning in colleges of education in North-west, Nigeria during Covid-19.

## Research Questions

i.      To what extent do pre-service teachers perceive e-learning as easy to use in colleges of education in North-west, Nigeria during the Covid-19 pandemic for academic activities?
ii.     What is the pre-service teachers' attitude towards the use of e-learning during the Covid-19 pandemic for learning in colleges of education in North-west, Nigeria?

## Literature Review

The relationship that exists between e-learning and ICT could not be over-emphasized. E-learning is the acquisition and conveying of knowledge or skills provided by the internet through advanced ICT tools in respect of place or time. E-learning can take place anytime-anywhere; this shows that e-learning can be adopted for learning by the students as they wish. The question here is do the pre-service teachers use e-learning tools easier and what is their attitude towards the use of e-learning tools? The literature reviewed is based on the ease and attitude of pre-service teachers.

Vitoria and Nurmasyitah (2018) in their research "Students' perceptions on the implementation of e-learning: helpful or unhelpful?" the research conducted to develop an e-learning web-based module at the Primary Education Department of Syiah Kuala University in Indonesia. The study was a descriptive survey with the use of purposive sampling techniques; the data was collected using a questionnaire and interview. The questionnaire was constructed based on the Technology Acceptance Model (TAM) which suggested that two factors influencing someone's acceptance of technology were perceived usefulness and perceived ease of use. The result showed that the students perceived the e-learning web-based module to be useful in improving their understanding, independence, self-discipline, motivation to learn and interactions with each other and with the teacher. The students also agreed that the e-learning web-based module was easy to use. Their study captured only usefulness and ease of use, but this research will also capture the attitude of pre-service teachers' use of e-learning resources for learning during covid-19 in North-west, Nigeria.

Mahdizadeh, Biemans and Mulder (2013) in their study "determining factors of the use of e-learning environments by university teachers", the study was designed to identify factors that can explain teachers' use of e-learning environments in higher education. Descriptive survey research was used; the questionnaire was only used for data collection and the research was conducted at Wageningen University with the use of convenience

sampling. They found that teachers' use of e-learning environments can be explained to a high extent by their perceptions of the added value of these environments, which in turn are substantially influenced by their opinions about web-based activities and computer-assisted instruction for teaching and learning. Their study is limited to only examining teachers' use of e-learning environments, in this research pre-service teachers will be investigating the ease of use and their attitude towards the use of e-learning.

Tamta and Ansari (nd) in their "study of university student's perceptions towards e-learning" was conducted on undergraduate students of a premier State Agriculture University (SAU) in India. The study targeted to find out the perception of students towards e-Learning. An exploratory research design was used in the study with purposive sampling; a structured questionnaire was used for data collection. The findings indicated that a large majority of students have positive perceptions about e-Learning. The researchers used exploratory research design, which means they are expected to use two instruments for data collection because is a mixed method; a structured questionnaire and either checklist, interview or documentation. In this research structured questionnaire and Data-bank will be used.

Mbabazi and Ali (2016) in their research evaluation of e-learning management systems by lecturers and students in Uganda universities: a case of Muni University, aimed at "evaluating the level of user satisfaction, usability issues affecting e-learning adoption and established the factors hindering the acceptance and use of teach management systems by lecturers and students in Uganda". A cross-sectional descriptive survey research design was used through a questionnaire only. The respondents agreed that the functionality of the system is good; the system is reliable, portable, usable, maintainable and efficient. The users also showed a positive attitude to using the system and also indicated that there is no specific person available to assist the users with and lack of equipment, course quality concerns, slow speed of the e-system, power problems, accessibility problems, network connections issues, lack of usability policy, legal concerns and lack of regular training on the use of module hinder their usage of the system. Purposive sampling was used. The researchers did not touch availability of e-learning tools. In the same vein, they are not expected to use purposive sampling because they could be biased.

Innocent and Masue (2020) discussed the applicability of e-learning in Higher Learning Institutions (HLIs) in Tanzania. The research targeted to investigate availability and the challenges facing e-learning users in the teaching and learning process in HLIs in Tanzania. The study employed a cross-sectional survey research design; data were collected using questionnaires and interviews through purposive sampling techniques. The results revealed that there is limited applicability of e-learning in the HLIs. The inadequate applicability of e-learning is attributed to poor attitude, lack of skills among the users and insufficient ICT infrastructure. The study did not examine the ease of use of e-learning tools.

Mohammed (2020) in his study "Challenges and prospects of using e-learning among EFL students in Bisha University" the study investigates whether using e-learning is beneficial to EFL students in their learning English to the degree anticipated. He used descriptive survey research with the use of a questionnaire for data collection. The study results show that there are no significant differences between English as Foreign Language students' (males and females) use of e-learning for their academic activities.

The research investigated the challenges and prospects of using e-learning in learning English only, this study will examine different categories of pre-service teachers in colleges of education in North-west, Nigeria.

Tagoe (2012), in his study which is based on the Technology Acceptance Model (TAM) which was conducted in Ghana, examined students' perceptions on incorporating e-learning into teaching and learning. Survey research was used; the researcher relied on the questionnaire only for data collection using stratified sampling. Results from the study showed that students entered the university with computer skills which are critical to the introduction of e-learning; male students use it more often than female students for learning; there was a relationship between the length of time students have been using the internet and frequency of use of the internet; students preferred mixed mode and web supplemented courses in the immediate future than web-dependent and fully online courses. The study was conducted in Ghana based on TAM and they did not touch the attitude of students. This research will be conducted in North-west, Nigeria; the target is to investigate the ease of use and attitude towards the use of e-learning.

Hassan, Kouser, Abbas and Azeem (2014) in their research "Consumer attitude and intentions to adopt smartphone apps" suggested that no matter how the technology is perceived to be useful, the practicality of technology ease of use may still affect users' intention of initial adoption or continuity. However, Hassan, Kouser, Abbas and Azeem (2014) argue that there is no direct relationship between PEOU and behavioural intention, whereas easy use of technology might be influential to users' perceived usefulness and affect users' adoption intention indirectly. This result is further supported by the applications of mobile services (Hassan, Kouser, Abbas &Azeem (2014). This study revealed that easy use of technology might be influential to users' perceived usefulness and affect users' adoption intention indirectly, they did not examine the attitude of the user.

Based on the ease of use of e-learning resources, the review shows that some students used the tools easily while some needed assistance from experts; the majority of the researchers revealed that some of the students have positive attitude towards the use of e-learning tools while some have negative attitude. Therefore, there is a need for research that will find out the ease of use and attitude of pre-service teachers' use of e-learning for the improvement of students learning in North-west, Nigeria during covid-19; to favour or enhanced it up to the standard.

The Majority of the researchers that investigated the use of e-learning employed a quantitative method of data analysis with only a questionnaire serving as their instrument, and very few used mixed methods. In this research mixed methods will be employed (quantitative and qualitative methods) with questionnaires and interviews will serve as instruments for data collection. The rationale behind this choice is to get reliable and quality results without any manipulation. However, the majority of the researchers used purposive and stratified sampling techniques but, in this study, a multistage sampling procedure was used.

**Methodology**

A Descriptive cross-sectional survey research design was used in this study. The selection of this design allowed the researchers to collect samples from a large group based on the

opinion and perceptions of people and subject the data to analysis. The researchers used mixed-method research through the use of quantitative and qualitative modes of data collection. The design allows the researchers to collect data from the respondents by using questionnaires and interviews (Data-Bank) to know their opinion and sensitivity, so the data was imperilled to statistical analysis and interpretation. Furthermore, the researchers used a convergent mixed-method approach. This enabled the researchers to collect data separately (both quantitative and qualitative) and later compare them and see the result if the findings are the same or not.

The populations of the study are the pre-service teachers in colleges of education in North-West, Nigeria. A total of One Hundred and Thirteen Thousand, and Thirty (113,030) pre-service teachers are studying in the fourteen colleges of education in North-West, Nigeria. The details about the names of institutions and population of the pre-service teachers are presented in Table 1 (see Appendix A).

Multistage (called clustering) is a sampling procedure, involving two or more sampling techniques. So do the needful by selecting the sample from the colleges of education in North-west, Nigeria. Cluster sampling is ideal when it is impossible or impractical to compile a list of the elements composing the population (Creswell, 2014). The Colleges of Education that were selected as per the population are Federal College of Education, Zaria, Kaduna State (FCEZ), Federal College of Education, Kano, Kano State (FCEK), Federal College of Education, Katsina, Katsina State (FCEKK), Shehu Shagari College of Education, Sokoto, Sokoto State (SSCE) and Zamfara State College of Education, Maru, Zamfara State (ZSCEM). The selected are to participate as representatives of the whole, the population of each institution listed above are 14,221,15, 235, 10,151, 12,244, and 5,835 respectively. However, the total population of the sampled colleges is 372 for quantitative, which is in line with the Raosoft sample size calculator. Raosoft is software programmed to help to determine sample size. The name of institutions, population and sample size were presented in Table 1.

**Table 1:       Name of institutions, population and sample size for quantitative**

| S/N | College of Education | Population | Sample Size |
|---|---|---|---|
| 1. | Federal College of Education, Zaria, Kaduna State. | 14,221 | **92** |
| 2. | Federal College of Education, Kano, Kano State. | 15,235 | **99** |
| 3. | Federal College of Education, Katsina, Katsina State. | 10,151 | **65** |
| 4. | Shehu Shagari College of Education, Sokoto State. | 12,244 | **79** |
| 5. | Zamfara State College of Education, Maru, Zamfara State. | 5,835 | **37** |
|  | Total | 57,686 | **372** |

The qualitative sample is smaller than that of the quantitative. The entire population that was chosen is 23; 5, 6, 4, 5, and 3 from FCEZ, FCEK, FCEKK, SSCE and ZSCEM respectively. (See Table: 2), the data for the qualitative sample is smaller than that of the quantitative. This is because the intent of using the qualitative method is to locate and obtain information from a small sample and to gather extensive information from the

sample; whereas, in quantitative research, a large number is needed to conduct meaningful statistics analysis (Ismaila, 2020).

**Table 2:        Name of institutions, population and sample size for qualitative**

| S/N | College of Education | Population | Sample Size |
|---|---|---|---|
| **1.** | Federal College of Education, Zaria, Kaduna State. | 14,221 | **5** |
| **2.** | Federal College of Education, Kano, Kano State. | 15,235 | **6** |
| **3.** | Federal College of Education, Katsina, Katsina State. | 10,151 | **4** |
| **4.** | Shehu Shagari College of Education, Sokoto State. | 12,244 | **5** |
| **5.** | Zamfara State College of Education, Maru, Zamfara State. | 5,835 | **3** |
| | Total | 57,686 | **23** |

The reasons behind the selection of FCEZ, FCEK, FCEKK, SSCE and ZSCEM were due to the time factor and logistics problems.

The structured questionnaire was adopted to collect data for quantitative. The questionnaire by Ismaila, (2020) questionnaire on "pre-service teachers' perception on the adoption of smartphones for learning in colleges of education in North-west, Nigeria" was adopted. The reason for adopting this is; the questionnaire is based on the technological resource for e-learning. The questionnaire has two parts; parts A and B. Part A is for demographic information of the respondents which contained 7 items, while part B contains 13 items based on ease of use and attitude of pre-service teachers' perceptions towards the use of e-learning in colleges of education in North-west, Nigeria during covid-19. In Part A, respondents are to tick the appropriate answer through the spaces provided. In Part B, the respondents are to tick the appropriate option (yes or no). The responses would tell us the accurate personal opinion of the respondents.

The five institutions (FCEZ, FCEK, FCEKK, SSCE and ZSCEM) were used for data collection from 23 respondents through interviews; 5, 6, 4, 5, and 3 from FCEZ, FCEK, FCEKK, SSCE and ZSCEM respectively. The responses were analyzed one after the other, summarizing the key points of the interview by the respondents which make the researchers arrive at the right decision/interpretation.

Data were analyzed in three stages, which are: demographic information, ease of use of e-learning resources and attitude of pre-service teachers' use of e-learning for the improvement and continue learning during covid-19 were analyzed using the part B of the instrument, with the use of Statistical Package for Social Science (SPSS) version 25:0; frequency count and simple percentage to explicate the demographic data of the respondents. To answer research questions one (1) and two (2) descriptive statistics (frequencies and percentages) were used. The qualitative data collected from the individual interviews were analyzed and interpreted and the right decision was made. There are two ways of analyzing qualitative data; one of the approaches is to examine your findings with a pre-defined framework, which reflects your objectives. This slant is quite easy and is closely affiliated with policy and programmatic research which has pre-

determined interests. This approach allows you to focus on particular answers and abandon the rest. We refer to this approach as 'framework analyses' (Ismaila, 2020).

**Results**

The demographic information of the respondents was analyzed using frequency and percentage. The demographic information based on gender is shown in Table 3.

**Table 3:          Frequency Distribution of Gender**

| Demographic Information | Frequency | Percentage (%) |
|---|---|---|
| **Gender**: | | |
| a. Male | 186 | 50% |
| b. Female | 186 | 50% |
| **Total:** | **372** | **100%** |

Table 3 shows that 186 (50%) of respondents were male while 186 (50%) were female. This indicates that male and female pre-service teachers' respondents were equal in colleges of education in North-Western Nigeria.

A descriptive analysis of respondents based on institutions is shown in Table 4.

**Table 4:          Frequency Distribution of Respondents' Names of Institutions**

| Demographic Information | Frequency | Percentage (%) |
|---|---|---|
| **Name of Institution:** | | |
| FCEZ | 92 | 25% |
| FCEK | 99 | 27% |
| FCEKK | 65 | 17% |
| SSCE | 79 | 21% |
| ZSCEM | 37 | 10% |
| **Total:** | **372** | **100%** |

Regarding the institution's frequency distribution, 92 or 25%) were from FCEZ; 99 (27%) were from FCEK; 65 (17%) were from FCEKK; 79 (21%) were from SSCE; while ZSCEM acquired the list of respondents of 37 (10%). Table 4 shows that respondents from FCEK were the majority.

**Research Questions**

Research Question One: To what extent do pre-service teachers perceive e-learning as easy to use in colleges of education in North-west, Nigeria during the Covid-19 pandemic for academic activities?

This research question is answered using frequency and percentage. A summary of the analysis is presented in Table 5.

**Table 5:       Perceived Ease of Use E-learning**

| S/N | Items | No | Yes |
|---|---|---|---|
| 1. | It's easy for you to use e-learning tools for learning? | 61 (16%) | 311 (84%) |
| 2. | Did your interaction with e-learning tools clear and understandable? | 61 (16%) | 311 (84%) |
| 3. | Did you think you will be skillful using e-learning? | 2 (1%) | 370 (99%) |
| 4. | Did you need someone to assist you while using e-learning? | 174 (47%) | 198 (53%) |
| 5. | Did you use e-learning tools alone? | 8 (2%) | 364 (98%) |
| 6. | Is e-learning tools available to you for learning? | 267 (72%) | 105 (28%) |
| 7. | Did you have adequate electricity for better use of online learning? | 361 (97%) | 11 (3%) |
|  | Cumulative Percentage | 36% | 64% |

Table 5 established that 64% of respondents agreed that e-learning tools are easy for them to use, while only 36% of the respondents disagreed with the statement. 64% of the respondents were the majority, this show that e-learning resources are very easy for the pre-service teacher to use for their academic activities.

Research Question Two: What is the pre-service teachers' attitude towards the use of e-learning during the Covid-19 pandemic for learning in colleges of education in North-west, Nigeria?

This research question is answered using frequency and percentage. A summary of the analysis is presented in Table 6.

**Table 6:       Attitude towards using e-learning**

| S/N | Items | No | Yes |
|---|---|---|---|
| 1. | Did you like to use e-learning during Covid-19/Pandemic? | 9 (2%) | 363 (98%) |
| 2. | Using e-learning during Covid-19/Pandemic, it's a good idea? | 9 (2%) | 363 (98%) |
| 3. | Is the use of e-learning a bad idea? | 370 (99%) | 2 (1%) |
| 4. | Did you use e-learning before Covid-19? | 198 (53%) | 174 (47%) |
| 5. | Did you use e-learning after 1$^{st}$ phase of Covid-19? | 201 (54%) | 171 (46%) |
| 6. | Did you appreciate the use of e-learning? | 51 (14%) | 321 (86% |
|  | **Cumulative Percentage** | **37%** | **63%** |

Table 6 acknowledged that 63% of respondents agreed that pre-service teachers possessed a positive attitude towards the use of e-learning during the Covid-19/Pandemic, while 37% of the respondents disagreed with the declaration. 63% of the respondents were the

majority; this shows that the attitude of pre-service teachers towards the use of e-learning is positive.

**Analysis of Individual Interview**

The individual interview was held with twenty-three pre-service teachers within the colleges of education in the North-west, Nigeria that were selected randomly. There are some elements of an interview report according to Alshenqeeti (2014), which are: themes and contents; methodology and methods (from designing to interviewing, transcription and analysis); result (the data analysis, interpretation and verification); and discussion.
As you aim to condense all of the information to key themes and topics that can shed light on your research question, you need to start coding the material. A code is a word or a short phrase that descriptively captures the essence of elements of your material (e.g., a quotation) and is the first step in your data reduction and interpretation (Celano, nd). The codes that were used for this study were: male A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11 and A12, while female B1, B2, B3, B4, B5, B6, B7, B8, B9, B10 and B11.

Research Question One: to what extent do pre-service teachers perceive e-learning as easy to use in colleges of education in North-west, Nigeria during the Covid-19 pandemic for academic activities?

This research question is answered using frequency and percentage. A Summary of the analysis is presented in Table 7.

**Table 7:        Perceived Ease of Use E-learning**

| S/N | Items | No | Yes |
|---|---|---|---|
| 1. | It's easy for you to use e-learning tools for learning? | 1 (4%) | 22 (96%) |
| 2. | Did your interaction with e-learning tools clear and understandable? | 8 (35%) | 15 (65%) |
| 3. | Did you think you will be skillful using e-learning? | 0 (%) | 23 (100%) |
| 4. | Did you need someone to assist you while using e-learning? | 6 (26%) | 17 (74%) |
| 5. | Did you use e-learning tools alone? | 6 (26%) | 17 (74%) |
| 6. | Did e-learning tools available to you for learning? | 15 (65%) | 8 (35%) |
| 7. | Did you have adequate electricity for better use of e-learning? | 19 (83%) | 4 (17%) |
| | **Cumulative Percentage** | **34%** | **66%** |

Table 7 affirmed that 66% of the respondents find e-learning tools very easy to use, is only respondent 34% of the respondents find online learning tools difficult to operate. The majority of the respondents were 66%, which indicated that pre-service teachers in colleges of education in North-west, Nigeria find e-learning tools very easy to operate.

Research Question Two: what is the pre-service teachers' attitude towards the use of e-learning during the Covid-19 pandemic for learning in colleges of education in North-west, Nigeria?

This research question is answered using frequency and percentage. A Summary of the analysis is presented in Table 8.

**Table 8:** **Attitude towards using e-learning**

| S/N | Items | No | Yes |
|---|---|---|---|
| 1. | Did you like to use e-learning during Covid-19/Pandemic? | 0 (0%) | 23 (100%) |
| 2. | Using e-learning during Covid-19/Pandemic, it's a good idea? | 0 (0%) | 23 (100%) |
| 3. | Did the use of e-learning a bad idea? | 23 (100%) | 0 (0%) |
| 4. | Did you use e-learning before Covid-19? | 13 (57%) | 10 (43%) |
| 5. | Did you use e-learning after 1$^{st}$ phase of Covid-19? | 13 (57%) | 10 (43%) |
| 6. | Can you appreciate the use of e-learning? | 0 (0%) | 23 (100% |
| | **Cumulative Percentage** | **36%** | **64%** |

On the pre-service teachers' attitude in the colleges of education in North-west, Nigeria towards the use of e-learning during Covid-19, table 8 affirmed 64% of respondents agreed that the use of e-learning will impact positively their learning. It is only 36% of respondents indicated a negative attitude towards e-learning. The result, therefore, shows that the attitude of pre-service teachers' toward the use of e-learning is positive.

The results of the study revealed that both the quantitative and qualitative are the same with regards to the ease of use and attitude of pre-service teachers' during covid-19 pandemic in the colleges of education in North-west, Nigeria.

**Summary of Findings**

The following are the findings of the study:

i.    Pre-service teachers in colleges of education in North-west, Nigeria find e-learning tools very easy to run.
ii.   The attitude of pre-service teachers in colleges of education in North-west, Nigeria on the use of e-learning is positive.

**Discussion of Findings**

The finding revealed that pre-service teachers in colleges of education in North-west, Nigeria find e-learning tools very easy to use, the finding is in line with the findings of Tagoe (2012); Vitoria and Nurmasyitah (2018).

One more finding indicated that the attitude of pre-service teachers in colleges of education in North-west, Nigeria on the use of e-learning is positive, which is the same as that of Mbabazi and Ali (2016); Tamta and Ansari (nd).

**Conclusion**

E-learning resources are the key to e-learning, without adequate provision of these tools in our various institutions of learning it could not be possible. More so, even if there is the availability of such resources, if teachers cannot use e-learning tools and their attitude is otherwise a problem in this era of technological innovations. This research indicated that pre-service teachers in colleges of education in North-West, Nigeria find e-learning very easy to use and their attitude towards e-learning use is positive. This is a great development in our educational sector, which will enable teachers and students to teach and learn irrespective of time, place and pandemic.

**Recommendations**

The subsequent recommendations pinched up from the results of the research:

1.  The Federal Republic of Nigeria through the Federal Ministry of Education should pledge and consolidate seminars, conferences, workshops or lectures regularly to enlighten and maintain lecturers' ease of use of e-learning resources for integration of ICT-related technology especially during any pandemic.
2.  The Federal Republic of Nigeria should provide adequate electricity which will enable lecturers and pre-service teachers to use e-learning anytime and everywhere to learn.
3.  The Federal Republic of Nigeria and Non-Governmental Organizations should make an effort for the provision of free networks in all parts of the country which will enable access to internet service for continued improvement of learning during any pandemic.

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**Appendix A**

| Table 1: | Name of Colleges and their respective Pre-service Teachers' Population: |
|---|---|

| S/N | Name of the College | Population |
|---|---|---|
| 1 | Jigawa College of Education, Gumel, Jigawa state. | 8,582 |
| 2 | Federal College of Education, Zaria, Kaduna State. | 14,221 |
| 3 | Kaduna State College of Education, Gidan-Waya, Kafanchan, Kaduna State. | 7,324 |
| 4 | Federal College of Education, Kano, Kano State. | 15,235 |
| 5 | Federal College of Education (Technical), Bichi, Kano State. | 9,983 |
| 6 | Sa'adatuRimi College of Education, Kumbotso, Kano State. | 8,123 |
| 7 | Federal College of Education, Katsina, Katsina State. | 10,151 |
| 8 | Imam Sa'idu College of Education, Funtua, Katsina State. | 1,105 |
| 9 | Isa Kaita College of Education, Dutsin-Ma, Katsina State. | 7,896 |
| 10 | Adamu Augie College of Education, Argungu, Kebbi State. | 7,101 |
| 11 | Biga College of Education, Arkilla, Sokoto, Sokoto State. | 2,80 |
| 12 | Shehu Shagari College of Education, Sokoto State. | 12,244 |
| 13 | Federal Girls College of Education (Technical), Gusau, Zamfara State. | 4,950 |
| 14 | Zamfara State College of Education, Maru, Zamfara State. | 5,835 |
| | **Total** | **113,030** |

**Source**: Concerned Authorities of the various Colleges of Education in the North-west, Nigeria (2022).